

Claims

1. An ion generator comprising:

a first electrode;

5 a second electrode;

a voltage generator electrically coupled to the first electrode and the second electrode in order, when energized, to create a flow of air in a downstream direction from the first electrode to the second electrode; and

wherein said second electrode is formed to have a leading nose and two side walls with

10 ends to the side walls and with the ends of the side walls bent back to substantially meet each other.

15 2. The ion generator of claim 1 wherein said second electrode is of one-piece construction.

3. The ion generator of claim 1 wherein the side walls have outer surfaces, and the outer surfaces of each of the side walls are bent back adjacent to the ends of the side walls so that the outer surfaces of the side walls are adjacent to each other.

20 4. The ion generator of claim 1 wherein the side walls have outer surfaces, and the outer surfaces of each of the side walls are bent back adjacent to the ends of the side walls so that the outer surfaces of the side walls face each other.

25 5. The ion generator of claim 1 wherein the side walls have outer surfaces, and the outer surfaces of each of the side walls are bent back adjacent to the ends of the side walls so that the outer surfaces of the side walls touch to each other.

6. The generator of claim 1 wherein said first electrode is an ion emitter and the second electrode is a collector of particulate matter.

5 7. The generator of claim 1 wherein said first electrode is positively charged and the second electrode is negatively charged.

8. The generator of claim 1 wherein said first electrode is pin-shaped.

10 9. An ion generator comprising:
a first electrode;
a second electrode;
a voltage generator electrically coupled to the first electrode and the second electrode in order, when energized, to create a flow of air in a downstream direction from the first electrode to the second electrode; and

15 wherein said second electrode is formed to have two side walls with ends to the side walls and with the ends of the side walls bent back to substantially meet each other in order to form a smooth trailing edge on said second electrode.

20 10. The ion generator of claim 9 herein said second electrode is of one-piece construction.

11. The ion generator of claim 9 wherein the side walls have outer surfaces and the outer surfaces of each of the side walls are bent back adjacent to the ends of the side walls so that the outer surfaces of the side walls are adjacent to each other.

25

12. The ion generator of claim 9 wherein the side walls have outer surfaces and the outer

surfaces of each of the side walls are bent back adjacent to the ends of the side walls so that the outer surfaces of the side walls face each other.

13. The ion generator of claim 9 wherein the side walls have outer surfaces and the outer
5 surfaces of each of the side walls are bent back adjacent to the ends of the side walls so that the outer surfaces of the side walls touch to each other.
14. The generator of claim 9 wherein said first electrode is an ion emitter and the second
10 electrode is a collector of particulate matter.
15. The generator of claim 9 wherein said first electrode is positively charged and the second electrode is negatively charged.
16. The generator of claim 9 wherein said first electrode is pin-shaped.
- 15
17. A device for conditioning air, including:
a housing with an air inlet and an air outlet
a first electrode;
a second electrode;
20 said first electrode located closer to said air inlet than said second electrode;
said second electrode located closer to said air outlet than said first electrode;
a potential generator electrically coupled to the first electrode and the second electrode in order, when energized, to create a flow of air in a downstream direction from the first electrode to the second electrode; and
25 wherein said second electrode is formed to have two side walls with ends to the side walls and with the ends of the side walls bent back to substantially meet the other side wall in

order to form a smooth trailing edge on said second electrode.

18. The generator of claim 1 wherein when said voltage generator is energized, ions are generated at said first electrode and flow toward said second electrode.

5

19. The generator of claim 9 wherein when said voltage generator is energized, ions are generated at said first electrode and flow toward said second electrode.

20. The device of claim 17 wherein when said potential generator is energized, ions are generated at said first electrode and flow toward said second electrode.

10

21. The ion generator of claim 1 wherein said second electrode is removable by a user for cleaning.

15

22. The ion generator of claim 9 wherein said second electrode is removable by a user for cleaning.

23. The device of claim 17 wherein said second electrode is removable by a user for cleaning.

20

24. The generator of claim 1 wherein:

 said generator is incorporated in a housing and said housing comprises an electro-kinetic air transporter-conditioner.

25. The generator of claim 9 wherein:

 said generator is incorporated in a housing and said housing comprises an electro-

kinetic air transporter-conditioner.

26. The generator of claim 1 wherein:

5 said generator is incorporated in a housing and said housing comprises an electro-
kinetic air transporter-conditioner and said housing has a top and said second electrode is
removable from said top for cleaning.

27. The generator of claim 9 wherein:

10 said generator is incorporated in a housing and said housing comprises an electro-
kinetic air transporter-conditioner and said housing has a top and said second electrode is
removable from said top for cleaning.

28. The device of claim 17 wherein:

15 said housing has a top and said second electrode is removable from said top for
cleaning.

29. The generator of claim 1 wherein:

10 said generator is incorporated in an elongated freestanding housing with a top and said
housing comprises an electro-kinetic air transporter-conditioner; and
20 wherein said second electrode is elongated and is removable from said top of said
housing.

30. The generator of claim 9 wherein:

25 said generator is incorporated in an elongated freestanding housing with a top and said
housing comprises an electro-kinetic air transporter-conditioner; and
 wherein said second electrode is elongated and is removable from said top of said

housing.

31. The generator of claim 17 wherein:

said housing is an elongated freestanding housing with a top; and

5 wherein said second electrode is elongated and is removable from said top of said housing.

32. The generator of claim 1 wherein:

said generator is incorporated in an elongated freestanding housing with a top and said

10 housing comprises an electro-kinetic air transporter-conditioner; and

wherein said second electrode is elongated and is at least partially removable from said top of said housing.

33. The generator of claim 9 wherein:

15 said generator is incorporated in an elongated freestanding housing with a top and said housing comprises an electro-kinetic air transporter-conditioner; and

wherein said second electrode is elongated and is at least partially removable from said top of said housing.

20 34. The device of claim 17 wherein:

said housing is an elongated freestanding housing with a top; and

wherein said second electrode is elongated and is at least partially removable from said top of said housing.

25 35. The generator of claim 1 wherein:

said generator is incorporated in an elongated freestanding housing with a top and said

housing comprises an electro-kinetic air transporter-conditioner; and

wherein said second electrode is elongated and is telescopingly removable through said top of said housing.

5 36. The generator of claim 9 wherein:

said generator is incorporated in an elongated freestanding housing with a top and said housing comprises an electro-kinetic air transporter-conditioner; and

wherein said second electrode is elongated and is telescopingly removable through said top of said housing.

10

37. The device of claim 17 wherein:

said housing is an elongated freestanding housing with a top; and

wherein said second electrode is elongated and is telescopingly removable through said top of said housing.

15

38. The device of claim 17 wherein said second electrode is of one-piece construction.

20 39. The device of claim 17 wherein the side walls have outer surfaces and the outer surfaces of each of the side walls are bend back adjacent to the ends of the side walls so that the outer surfaces of the side walls are adjacent to each other.

25 40. The device of claim 17 wherein side walls have outer surfaces and the outer surfaces of each of the side walls are bent back adjacent to the ends of the side walls so that the outer surfaces of the side walls face each other.

41. The device of claim 17 wherein the side walls have outer surfaces and the outer

surfaces of each of the side walls are bent back adjacent to the ends of the side walls so that the outer surfaces of the side walls touch to each other.

42. The device of claim 17 wherein said first electrode is an ion emitter and the second
5 electrode is a collector of particulate matter.

43. The device of claim 17 wherein said first electrode is positively charged and the second electrode is negatively charged.

10 44. The device of claim 17 wherein said first electrode is pin-shaped.

45. An electrostatic air transport-conditioner, comprising:
a housing having an inlet and an outlet; and
an ion generator that creates an airflow in a downstream direction from the inlet
15 to the outlet, including:

a first electrode;
a second electrode, located downstream of said first electrode, having
a nose and two trailing sides extending downstream, towards said outlet, from said nose;
said trailing sides include an end section that is formed inward, back
20 towards said nose, such that substantially no gap exists between said trailing sides; and
a high voltage generator electrically connected to said first and second
electrode.

25 46. An electrostatic air transport-conditioner as recited in claim 45, wherein said first and second electrode have opposite polarities when said ion generator is polarized.

47. An electrostatic air transport-conditioner as recited in claim 45, wherein said second electrode is constructed out of a single piece of material.

48. An electrostatic air transport-conditioner as recited in claim 45, wherein said trailing 5 sides of said second electrode are spot welded.

49. An electrostatic air transport-conditioner as recited in claim 45, wherein said second electrode is removable from said housing for cleaning.

10 50. An electrostatic air transport-conditioner as recited in claim 49, wherein said housing further has a top surface, and said second electrode is telescopically removable through said top surface of said housing.

51. An electrostatic air transport-conditioner, comprising:

15 a housing having an inlet and an outlet; and

an ion generator, for creating an airflow in a downstream direction from the inlet to the outlet, including:

a first electrode;

a second electrode, located downstream of said first electrode, having

20 a nose and two trailing sides extending downstream, towards said outlet, from said nose;

said trailing sides include an end section that is formed by bending said trailing sides inward and back towards said nose, such that said end sections are adjacent to each other and within said trailing sides of said second electrode; and

a high voltage generator electrically connected to said first and second

25 electrode.

52. An electrostatic air transporter-conditioner as recited in claim 51, wherein said first and second electrode have opposite polarities when said ion generator is energized.